OPTILION PICO MICROSCOPE

USER'S MANUAL

SELIGA
MICROSCOPES

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1. Standard labelling of the device

1.1 Description of the graphical symbols

Product is compliant with the EU Directives. CE mark.

Do not discard with the household waste.

Applicable part of B type.

Read the related documentation.

Warning!

Serial number of the device.

Information concerning producer.

Production date.

2. Introduction

The Optilion PICO Microscope combines solutions which are currently used in the international medical market. The Microscope could be applied in the field of dentistry, laryngology, ophthalmology and veterinary. The Optilion PICO Microscope enables user to obtain a magnification of the examined area. Implementation of the Microscope has a positive influence on the results of treatment and effectiveness of the diagnosis. Its use is indicated for the different medical specialties to assist the professionals, allowing them to achieve a better performance.

The series of Optilion PICO Microscopes is designed and created according to the international norms of quality. Each model is tested thoroughly to ensure its good performance. Optilion PICO Microscope is an ergonomic and almost service-free device. It is perfect for both clinical and phantom practice conditions.

Implementation of LED Light source allows to obtain a strong and white light source. The estimated lifetime of the LED accounts for 50000 hours of work, approximately. Availability of different models of the Optilion PICO Microscopes together with the compatibility of all its accessories allow this equipment to achieve all the necessary characteristics for the different specialties. The device can be equipped with a vision track with CCD camera or a digital camera, which allows observing the performed operation on TV or PC screen. Suitable software makes it possible to run a thorough documentation of medical cases.

The content of this manual describes recommended procedures allowing user to install and use the Optilion PICO Microscope. It contains all the necessary information for the care and appropriate use of the Microscope. Please read carefully this manual before using the microscope. If you have any doubts regarding the content of this manual, operation or equipment security, please contact Seliga Microscopes Sp. z o.o.

This symbol will be used in the manual to indicate information that will include warnings or important precautions.

Data of the manufacturer:

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3. Microscope Description

Below, there is a description of two Optilion PICO models: PICO ONE and PICO NEW.
This section provides the user with information concerning technical data of the Microscopes' series.

3.1 Optilion PICO NEW

Fig.1 Optilion PICO NEW

1. Binocular	5. Power supply
2. Microscope head	6. Column
3. Head handle	7. Base
4. Parallelogram arm	

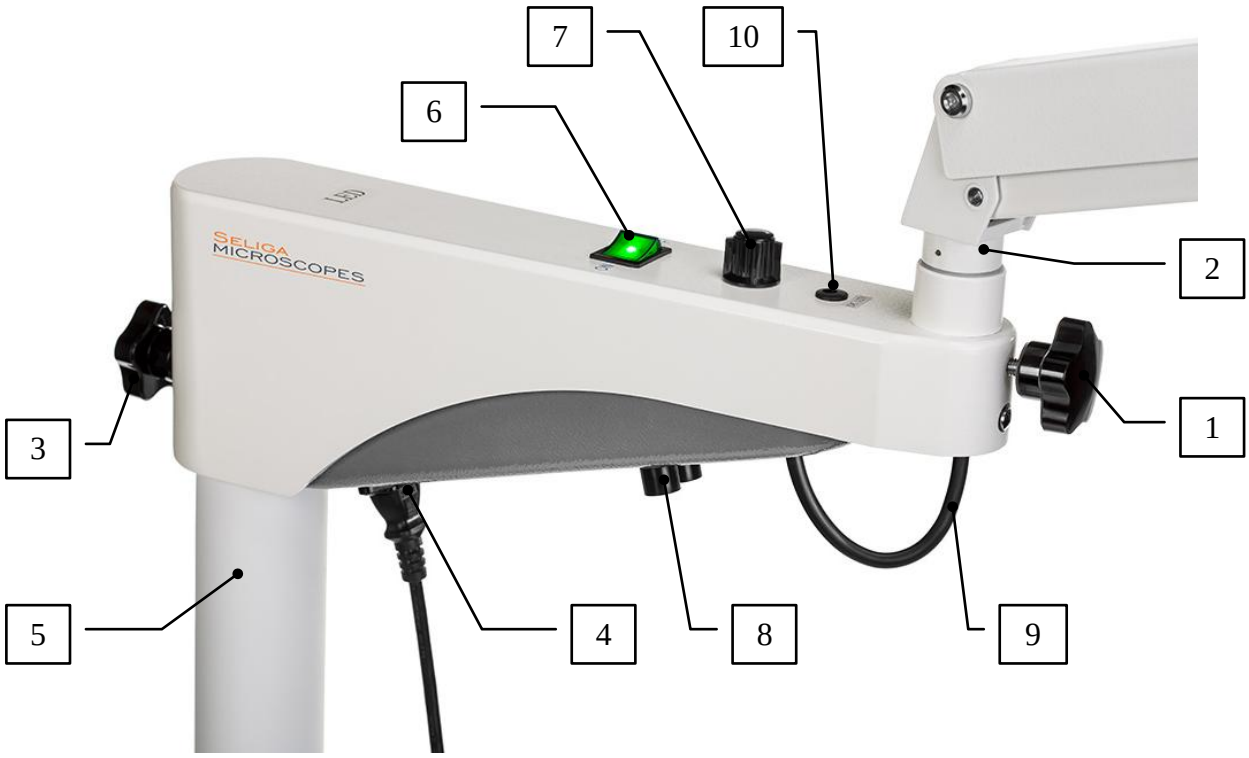

Fig.2 Power supply

1. Arm blocking control	6. ON/OFF switch
2. Parallelogram arm mounting	7. Light intensity control
3. Power supply blocking control	8. Fuse socket
4. Power supply socket	9. LED power supply cable
5. Column	10. Input 12V

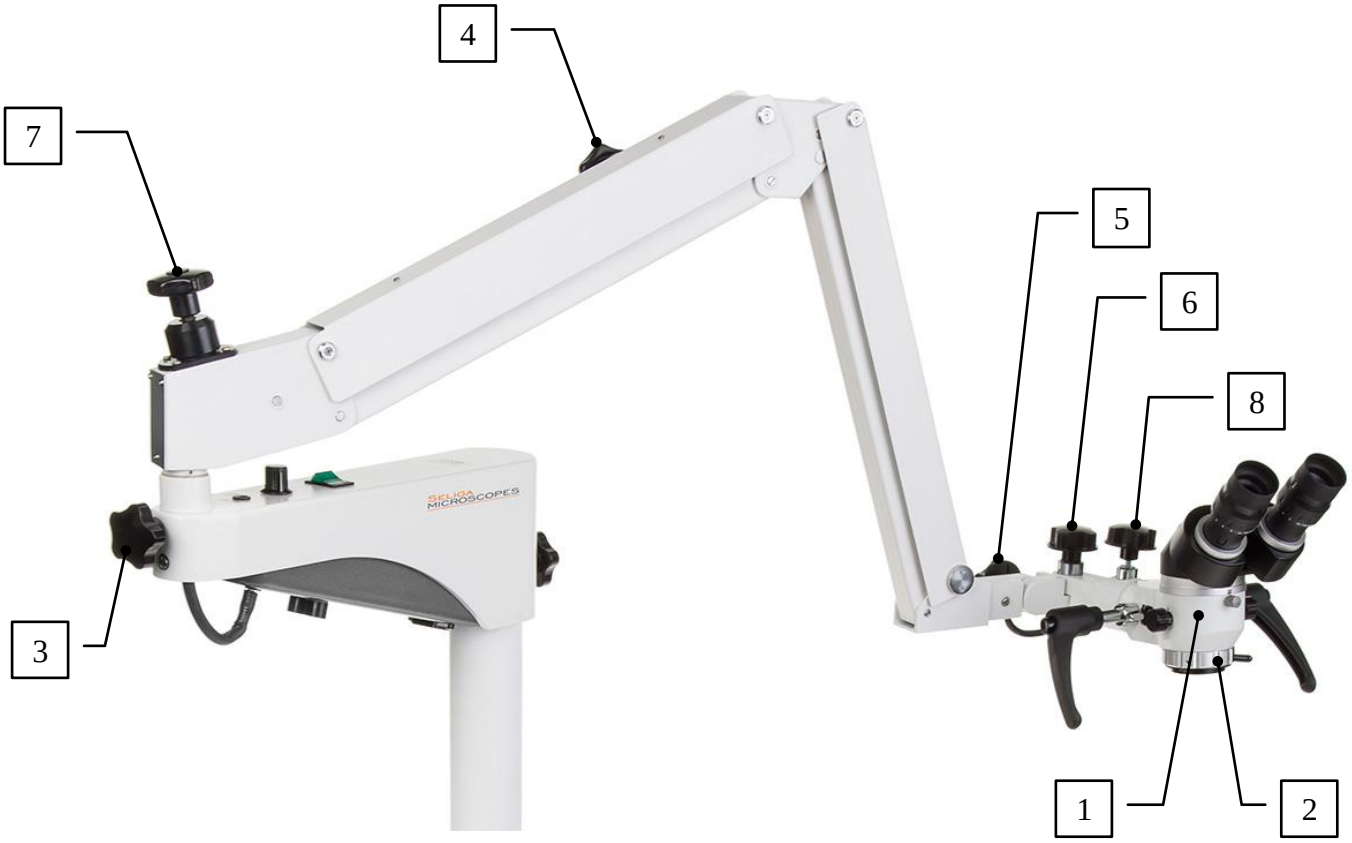

Fig. 3 Arm of the Microscope

1. Head	5. Head vertical movement control
2. Objective	6. Head horizontal movement control
3. Power supply blocking control	7. Arm movement control
4. Arm blocking control	8. Head horizontal/vertical movement control

3.2 Optilion PICO ONE

Fig. 4 Optilion PICO ONE

1. Binocular	5. Power supply
2. Microscope head	6. Column
3. Head handle	7. Base
4. Parallelogram arm	

Fig.5 Power supply

1. Arm movement control	6. ON/OFF switch
2. Parallelogram arm mounting	7. Light intensity control
3. Power supply blocking control	8. Video camera input
4. Power supply socket	9. LED power supply cable
5. Column	10. Input 12V

Fig. 6 Arm of the Microscope

1. Head	4. Head vertical movement control
2. Objective	5. Head horizontal movement control
3. Arm movement control	6. Head horizontal/vertical movement control

4. Technical Specifications

4.1 Technical data for the Microscope Optilion PICO NEW

Device model	Microscope Optilion PICO NEW
Device version	Mobile Options: Standfloor, Ceiling, Wall
Base	H-shaped, 570 x 580 mm, 4 wheels with brakes
Column height	980 mm
Arm length	1280 mm
Total device height	1060 mm
Arm working distance	640-1540 mm
Light	LED Light
Brightness regulation	Smooth
Luminous intensity regulation	Potentiometer
Head type	Stereoscopic
Magnification steps	3
Image sharpness regulation	Smooth
Optics type	Apochromatic
Horizontal range of arm movement	300°
Vertical range of head movement	85°
Horizontal range of head movement	180°
Range of manual regulation for image sharpness	13 mm
Maximal depth of view	70 mm[1]
Macro regulation	Yes, arm regulation (up and down)
Micro regulation	Yes
Head inclination	85°
Angle of head rotation	360°
Angle of device rotation (with respect to vertical axis)	360°
Objective focal length	200/250/300/400mm
Magnification of binocular	10x/12,5x
Diameter of illuminated area	70 mm
Objective coaxial illumination (± 0,5°)	Yes
Optical filters	Green, orange filter
Regulation of stereoscopic width	±5 diopters
Binocular type	45°, 90°, 195°
Regulation of interpupillary distance	55-80 mm
Fuse type	2 fuses 2A
Weight	55 kg
Ambient temperature	10-40 ° C
Atmospheric pressure	700-1060 hPa
Humidity	30-75%

[1] For the objective with focal length of 400 mm and factor 0.6x

4.2 List of additional accessories applicable in Optilion PICO NEW

The Microscope Optilion PICO NEW could be equipped with additional accessories:

- Vision track consisting of:
  - CCD WATEC camera, beamsplitter and adapter
  - Digital camera, beamsplitter and adapter
  - Digital video camera, beamsplitter and adapter
- Beamsplitter with monocular for a technician
- Rotational ring
- LCD Monitor with a mast
- Inclined binocular 45˚/straight binocular 90˚/inclinable binocular 0-195˚
- Binocular extender
- Eyepieces 12,5x
- Objective with focal length: 200 mm/300 mm/400 mm

To obtain additional accessories, please contact with the service department of Seliga Microscopes Sp. z o.o.

4.3 Optical features of the Optilion PICO NEW

Basic specifications Optilion PICO NEW					
Multiplication factor at the knob	Objective (mm)	200	250	300	400
0.6	Magnification	5,06	4,05	3,37	2,53
1	Magnification	8,44	6,75	5,63	4,22
1.6	Magnification	13,5	10,8	9	6,75

4.4 Technical data for the Optilion PICO ONE

Device model	Microscope Optilion PICO ONE
Device version	Mobile Options: Standfloor, Ceiling, Wall
Base	H-shaped, / 470 x 490 mm, 4 wheels with brakes
Column height	980 mm
Arm length	1190,5 mm
Total device height	1060 mm
Arm working distance	640-1540 cm
Light	LED Light
Brightness regulation	Smooth
Luminous intensity regulation	Potentiometer
Head type	Stereoscopic
Magnification steps	3
Image sharpness regulation	Smooth
Horizontal range of arm movement	300°
Vertical range of head movement	85°
Horizontal range of head movement	180°
Range of manual regulation for image sharpness	13 mm
Maximal depth of view	30 mm[2]
Macro regulation	Yes, arm regulation (up and down)
Micro regulation	Yes
Head inclination	85°
Angle of head rotation	360°
Angle of device rotation (with respect to vertical axis)	360°
Objective focal length	200/250/300/400mm
Magnification of binocular	12,5x
Diameter of illuminated area	750 mm
Objective coaxial illumination (± 0,5°)	Yes
Optical filters	Green, orange filter
Regulation of stereoscopic width	±5 diopters
Binocular type	45°, 90°, 195°
Regulation of interpupillary distance	55-75 mm
Fuse type	2 Fuses 2A
Weight	54 kg
Ambient temperature	10-40 ° C
Atmospheric pressure	700-1060 hPa
Humidity	30-75%

[2] For the objective with focal length of 400 mm and factor 0.6x

4.5 Optical features of the Microscope Optilion PICO ONE

Basic specifications Optilion PICO ONE					
Multiplication factor at the knob	Objective (mm)	200	250	300	400
0.6	Magnification	4,7	3,7	3	2,3
1	Magnification	7,5	6	5	3,8
1.6	Magnification	12	9,6	8	6

4.6 List of additional accessories applicable in Optilion PICO ONE

The Microscope Optilion Pico One could be equipped with additional accessories:

- Vision track consisting of:
  - Digital camera, beamsplitter and adapter
- Inclined binocular 45˚/ straight binocular 90˚/inclinable binocular 0-195˚
- Available objective with focal length: 200 mm/250mm/300 mm/400 mm
- Rotational ring 360°

To obtain additional accessories, please contact with the service department of Seliga Microscopes Sp. z o.o.

4.7 LED Light Source

The Optilion PICO Microscope has been equipped with illumination module based on the LED technology. The technology has been designed to be used in medical applications. The LED system allows the connection of the Seliga Microscopes universal CCD camera. The table below shows the basic technical parameters of the LED Light.

Technical parameters of LED Light	
Power of LED Light	10 W
Power of the system	20 W
Applied voltage	AC230±10%/50Hz
Color temperature - CCT	min 5700K
	max 6350K
LED Lifetime	50000 hours of work
Type of the Light	White

The focal point of the lamp achieves a very high temperature. It means that the head staying in contact with the lamp will get hot. Do not look directly into the objective lens of the microscope.

5. Installation

1. Unscrew the mounting cap from the first part of the column. (Fig.7)

2. Place the column in the base of the microscope. Put the column in the mouth of the base. Screw manually the mounting tap from the bottom of the base.(Fig.8)

3. When both parts are fixed, lean the base with the column carefully. Screw tightly the mounting cap of the column to the base with use of a screwdriver. Then, put the construction vertically. (Fig.9 and Fig.10)

4. Install the power supply with LED Light on the top of column. (Fig.11 and Fig.12)

5. Place the parallelogram arm with the LED power supply cable. Strain the cable over the mounting of the power supply. Then connect it to the power supply socket. (Fig.13 and Fig.14)

6. Screw tightly the arm screw to block the parallelogram arm. Tighten the power supply blocking control and arm movement control. (Fig.15, Fig.16 and Fig.17)

7. Adjust the head position. Loose the head vertical movement control to regulate the head. Tight the control when desired height is set. (Fig.18 and Fig.19)

8. Fix the handles to be able to maneuver the head of the microscope. To fix the handles in an appropriate manner, attention should be paid to the nuts of handles. Use an insulating material to protect the nuts from a damage. Place the material between the surface of nuts and the key. (Fig.20 and Fig.21)

9. Fix the binocular on the top of the head. Screw the binocular with use of an Allen key.(Fig.22 and Fig. 23)

10. At the end, mount both eyepieces of the microscope. Place the eyepieces in the binocular. (Fig. 24) This step is not applicable to Optilion PICO ONE.

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

Fig. 13

Fig. 14

Fig. 15

Fig. 16

Fig. 17

Fig. 18

Fig. 19

Fig. 20

Fig. 21

Fig. 22

Fig. 23

Fig. 24

6. Revision and operation

6.1 Revision

Once the installation is finished, we recommend the following checkpoint control preceding the set up of the Microscope.

- Check that the voltage in a local network is compliant with the voltage specified for the device (voltage indicated on the back of the light source). The corresponding value accounts for 230V.

- Check that fuses are placed in a fuse holder and are compliant with the parameters shown on the label of power supply.

- Verify that there are no water, liquids or flammable gases in the nearby of the device that could cause damages to the equipment.

The Microscope should be connected to electrical network with a corresponding grounding connection. Before the equipment use, please verify the grounding connection and compare it with specification of the Microscope.

If any abnormality is detected before connecting to the Microscope, please contact the technical department of your local distributor prior to the use of the microscope on a patient.

7. Manipulation

7.1 Operations

1. Once the installation is finished, put the microscope in an operation place. Adjust the suitable position of the power supply, parallelogram arm and microscope. The microscope is ready to use. You can use extra accessories as well.

2. Switch the power on, set the light intensity control in a desired position. Then, get hold of the handles and place the microscope in a suitable position so as the sharp image could be observed in the binocular. Tighten the suitable controls. Implementation of a ball joint and the parallelogram arm allow placement of the microscope in any plane.

3. Adjust manually the distance between eyepieces so as the image seen in the binocular becomes a one circle (stereoscopic vision). (Fig.25 and Fig. 26)

Fig. 25

Fig. 26

4. Set the suitable magnification with the magnification selector.
5. Set the light intensity control so as the lightning during operation was optimal.
6. In order to improve comfort of work, carry out the procedure of setting confocal vision.
7. The microscope is equipped with an orange filter which prevents the filling materials from premature hardening and an orange filter which increases the contrast of the image. Filters are set with a tile on the microscope's housing by moving it right or left.
8. When operation is finished, set the light intensity control at the minimum value. After few seconds, turn the power off (turn the switch to position "0"), fold the parallelogram arm and move the microscope to a safe place.

7.2 Setting the confocal vision

1. Set the minimal magnification with use of magnification selector and find the “0” position of the diopter ring. (Fig. 27 and Fig. 28)

Fig. 27

Fig. 28

2. Adjust the microscope head above a flat surface at the object lens’ focal length. On a white sheet of paper draw with a sharp pencil a cross (X) of a diameter of ca. 5 cm. Put the paper to set the cross in the center of the field illuminated with the head light. (Fig. 29)

Fig. 29

3. Observe the image in the binocular. If the image is not sharp, regulate the height of the microscope head. Change the magnification to maximal keeping the diopter ring on “0”position.(Fig. 30)

Fig. 30

4. Adjust focus with the micrometer screw to gain a clear and sharp image of the cross (X). Pay attention to not move the microscope head.
5. Change the magnification to the minimal value and set the sharpness with use of diopter rings. Perform the setting separately for each eye. Proceed with the following steps:

    - Turn the diopter ring maximally right.
    - Close your right eye and look into the left eyepiece of the binocular with your left eye.
    - Turn slowly the diopter ring until the sharp image is seen. (Fig. 31)

The procedure should be repeated analogically for the right eye.

Fig. 31

6. Check that the image is always clear and sharp when magnification is changed from minimal to maximal.
7. If not, repeat the above described actions until the result is satisfying.

Values on the diopter rings should be remembered (or noted down) individually for each user of the microscopes.

8. Maintenance and special notes

Check the condition of the device before each use of the Microscope. Make sure that all components are connected to the device in a right manner. Verify that the Microscopes' components are not damaged. Once a year it is recommended to perform inspection of the device. It should be conducted by an authorized service of Seliga Microscopes Sp. z o.o.

Before the cleaning proceeds, disconnect the power supply cable to avoid electrical discharges. The Optilion PICO Microscopes must be repaired and/or maintained exclusively by the authorized Seliga Microscopes Sp. z o.o. technical service within the guarantee period.

8.1 Storage and moving of the Microscope

The place where the Microscope is kept and maintained should be clean (free from dirt and damp). Arm of the Microscope should be placed in the "closed" position, which is the most favorable one to keep the device in a good condition. The corresponding cover should be put on the Microscope.

Before moving the device proceeds, make sure that the power supply cable is disconnected from the supply and is fixed to the Column. Arm of the Microscope should be placed in the "closed" position. To move the Microscope in a safe manner, two persons should be involved in the transportation procedure. One should hold the column of the Microscope, another one should support the arm of the Microscope. While setting the arm position, pay attention to not wrench the power supply cable of the diode.

8.2 Cleaning procedure

1. It is allowed to clean metallic elements of the Microscope with chemicals intended for the medical devices.
2. The metallic elements (base, column, power pack, arm) should be cleaned with a damp cloth.
3. Take care to not let the liquid into the Microscope to avoid dampening of its elements.

Do not use flammable substances, in particular alcohol, when the light source is warm. It is forbidden to use detergents, solvents and other abrasive agents in the clearing procedure. Do not sterilize any parts of the Microscope with use of autoclave.

8.3 Cleaning of optics

During everyday use of the Microscope, lenses of objective and eyepieces could become contaminated. It is recommended to clean the optics, only in situations when contamination affects the sharpness of image. That will limit the risk of scratching the optics of the Microscope.

1. Before you proceed with the cleaning, remove an invisible specks of dust which could scratch the eyepieces. It is recommended to remove the speck with use of a chip-blower.
2. Use a cotton wad damped with the alcohol (at least 95%) and clean the lenses gently. Perform the cleaning by making circular movements from the middle of the lenses to the external part. Instead of the cotton wad a cotton-wool tip could be used.
3. Clean the optics until the contamination is removed from the surface of lenses. It could take few minutes.

8.4 Electrical connections

Check regularly the condition of all the components and monitor their aging process.
Verify that the following does not exist:

1. Faulty, broken or cut cables.
2. Faulty connection between the cable and the plug.

The microscope belongs to the energy class B and requires grounding. You should remember that grounding guarantees safety at work.

Note that the power supply cable conducts the electric current so it should not be pulled, torn or cut. The power supply cable should be well protected because of safety reasons. If it is damaged inside, it should be immediately changed. The plug should not be wet. While moving the device the cable should be wound around the Column. If any damage of the cable is found, replace it immediately. The plug of the cable should be never wet. While moving the device the Column should be kept stable in order to avoid turning over or hitting something. The cable should be wrapped around the mast to provide a safe transport of the Microscope.
After blocking the mobile elements the position of controls shouldn't be changed. In order to change position of a given element a suitable control should be loosened first. Improper service can lead to damage of the device. During fuse changing the device should be switched off. There is a three-year warranty for the device. In case of any problems, please contact Seliga Microscopes Sp z o.o.

8.5 Utilization procedure

Each user of the electronic equipment should be acknowledged with the disposing procedure of electronic wastes. The device should never be discarded with the household waste. Please, check the local regulations for disposal or recycling of electronic components.

9. The most common problems

The following is a table indicating the most common problems and their quick solutions. Please consult this table, for any difficulty you may find.

PROBLEM	POSSIBLE CAUSE	ACTION
The light source does not work.	It is not connected to the local electrical network.	Connect the cable to the network.
	The power supply cable is broken or cut.	Change the cable.
	The plug is in a bad condition.	Change the plug.
	The fuse is broken or burnt out.	Change the fuse.
	The tension of the network is not compatible with the one required for the equipment.	Verify.
There is no illumination even green pilot light is on.	The lamp is burnt.	Select the other lamp to work or change the lamp.
The intensity of the light is not correct.	The lamp is damaged.	Replace.
	The lamp is out of place.	Verify that the lamp is secured in place.

In case of electromagnetic interference with other electromedical or electrical equipment, we recommend you widening the distance between the microscope and the other equipment in order to minimize these effects.

If as a consequence of inadequate use of the equipment, improper use of the manual, bad care and maintenance, repair and manipulation by an unauthorized personnel, any material or personal damage is caused to third parties, Seliga Microscopes Sp. z o.o., the manufacturer and provider of the equipment, does not assume any responsibility.

10.Maintenance card

Work performed	Responsible person	Date	Signature
		___/___ /___	
		___/___ /___	
		___/___ /___	
		___/___ /___	
		___/___ /___	
		___/___ /___	
		___/___ /___	
		___/___ /___	
		___/___ /___	
		___/___ /___	
		___/___ /___	

11. Repair service

The Optilion PICO Microscope must be repaired and/or maintained exclusively by an authorized Seliga Microscopes Sp. z o.o. technical service. We recommend the use of the following procedures to let a quicker repair service and replacement of products under guarantee.

1. Obtain telephone contact with the technical department of Seliga Microscopes Sp. z o.o.
2. Give detailed information of the problem.
3. If the problem cannot be resolved by detecting failures, you must send the products for their repair or replacement.
4. You must attach the following product information:
   - Name of owner.
   - Owner's address.
   - Person to contact by phone and phone number.
   - Serial number of the product.
   - Description of the problem.

Send the Microscope for repair or replacement. You must send the microscope in its original packing so that the equipment is not damaged during transport. Our company is not responsible for damages, which may occur during transport due to deficient packaging.

12. Warranty

Seliga Microscopes Sp. z o.o. states that the Optilion PICO Microscope has complied with the quality control verification required and has no manufacturing defects, which guarantees the appropriate functioning under adequate use in agreement with the indications of this manual. The warranty is valid for three (3) years from the date of Microscope purchase.

Seliga Microscopes Sp. z o.o. is not responsible for any damages caused to the Microscope due to incorrect use, negligence, cleaning or incorrect storage. Any repairs made by personnel who are not authorized by Seliga Microscopes Sp. z o.o. will invalidate the warranty.
The following situations are excluded from the warranty:

- Mechanical damages of the lenses (scratches and ruptures) during use of the Microscope.
- Damages resulting from incorrect connection to different power supply tensions.

Without taking into consideration the situations of the warranty, all shipments from and to the authorized technical service of Seliga Microscopes Sp. z o.o. are the sole responsibility of the client.

13. Safety rules

This chapter describes the safety features included in the Optilion PICO Microscope system, as well as the safety precautions to be considered when handling and using the device.

13.1 Safety features of the System

The Optilion PICO microscope system contains the following safety features:

- There shall be a main switch to turn the equipment ON and OFF.
- The system is labeled according to the international safety standards and is pursuant to the specific voltage levels of the country.
- The system is factory-equipped with adequate ground connection.

13.2 General Precautions

- Do not touch or handle the internal parts of the system except during its maintenance / repair.
- Only authorized personnel from the company shall perform the maintenance and repair of this system.
- Make sure that all personnel involved in the study are familiar with the system controls and know how to turn it off immediately in case of emergency.

13.3 Personal Safety

When operating the system the main concern shall be the safety both of the patients and the equipment users. Follow these safety guidelines in order to keep a high personal safety level.

- Check that the person performing the study is qualified to use the Microscope.
- Before performing the study, get a detailed clinical record of the patient in order to check if he/she is in good condition to undergo it.
- Inform the patient about the study, the possible results and any risk associated with it.

13.4 A Safe Environment

Keep the following environmental requirements to protect the system parts and allow an optimum operation.

- Keep the system away from any corrosive material that may damage the electronic parts.
- Keep the system clean and away from metallic dust and dirt that may damage the electrical parts of the equipment.

Do not try to operate or perform the maintenance of the system before reading the safety information provided in this chapter.

13.5 Electrical and Mechanical Safety

Follow these instructions to guarantee the electrical and mechanical safety of the equipment:

- Do not remove the system covers or panels while in service.
- Check that the system is turned off and the electricity disconnected before trying to perform its maintenance or repair.
- The Optilion PICO Microscope shall only be used in places with electrical installations that meet the national, provincial and local regulations in effect.
- The Optilion PICO Microscope shall be connected to the grounding of the operation room or to the endoscopy tower through a ground cable.
- The Optilion PICO Microscope shall be connected to the voltage line through the power supply cable provided.
- The power supply shall only be provided with a protective plug and the adequate ground connection.

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13.6 Fire Risks

Follow these instructions in order to avoid fire risks:

- For a continuous fire protection, replace the fuse only by one of the same type and voltage.